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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,869	09/29/2003	Edward Harris Tegge JR.	GCSD-1482 (51344)	1358
27975	7590	09/14/2006	EXAMINER	
ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A. 1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE P.O. BOX 3791 ORLANDO, FL 32802-3791			SINGH, DALZID E	
			ART UNIT	PAPER NUMBER
			2613	

DATE MAILED: 09/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/673,869

Applicant(s)

TEGGE ET AL.

Examiner

Dalzid Singh

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7, 9-12, 16, 17, 19-21, 25 and 26 is/are rejected.
- 7) ☒ Claim(s) 4-6, 9, 13-15, 18, 22-24 and 27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7-9 and 16-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 7, 16 and 25 recites the limitation "said OR module". There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 7, 8, 19-21, 25 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Kaneko et al (US Pub. No. 2004/0017620).

Regarding claims 1 and 19, Kaneko et al disclose free space optical (FSO) communications device, shown in Fig. 18, comprising:

a plurality of power supplies having different respective output voltages (as shown in Fig. 18, plurality of resistors provides different output voltages; since the resistors supply different voltages corresponding to different power level, therefore they can be considered as plurality of power supplies);

an adaptive optics (AO) module comprising an AO housing (48) and a deformable mirror (33) carried thereby, said deformable mirror comprising an array of actuators (33b) each operating based upon a supplied voltage (the voltage is supplied by the resistors); and

a power controller (38) for selectively driving said array of actuators using a desired one of said power supplies to conserve electrical power.

Regarding claims 2 and 20, wherein said deformable mirror further comprises a reflective deformable member (33a) mounted on said array of actuators.

Regarding claims 3 and 21, Kaneko et al disclose deformable mirror which is exposed to environmental condition, therefore it is inherent that the module comprises a thermal stress isolation mount connecting said deformable mirror to the housing.

Regarding claims 7 and 25 (as far as understood in view of 112 2<sup>nd</sup> paragraph), Kaneko et al disclose base module connected to said AO module for providing relative movement (Figs. 11A-11C, 12-15 the base module).

Regarding claims 8 and 26, Kaneko et al show said base module comprises a base housing and at least one positioner carried thereby (see Figs. 11A-11C, 12-15).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-12, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shelton et al (US Pub. No. 2004/0141752) in view of Kaneko et al (US Pub. No. 2004/0017620).

Regarding claim 10, Shelton et al disclose a free space optical (FSO) communications system, as shown in Fig. 2, comprising:

first (on the left) and second (on the right) FSO communications devices aligned for optical communication therebetween.

Shelton et al disclose free space optical communication system comprising of controllable deformable mirror (315) as shown in Fig. 3. Shelton et al differ from the claimed invention in that Shelton et al do not disclose the specific circuitry of the deformable mirror such as comprising a plurality of power supplies having different respective output voltages, an adaptive optics (AO) module comprising an AO housing and a deformable mirror carried thereby, said deformable mirror comprising an array of actuators each operating based upon a supplied voltage, and a power controller for selectively driving said array of actuators using a desired one of said power supplies to conserve electrical power. Kaneko et al teach such circuitries for the deformable mirror

(see claim 1). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide such circuitries as taught by Kaneko et al to the deformable mirror of Shelton et al. One of ordinary skill in the art would have been motivated to do such in order to compensate distortion of the optical signal.

Regarding claim 11, as shown in Fig. 18, Kaneko et al disclose wherein said deformable mirror further comprises a reflective deformable member (33a) mounted on said array of actuators.

Regarding claim 12, Kaneko et al disclose deformable mirror which is exposed to environmental condition, therefore it is inherent that the module comprises a thermal stress isolation mount connecting said deformable mirror to the housing.

Regarding claim 16 (as far as understood in view of 112 2<sup>nd</sup> paragraph), Kaneko et al disclose base module connected to said AO module for providing relative movement (Figs. 11A-11C, 12-15 the base module).

Regarding claim 17, Kaneko et al show said base module comprises a base housing and at least one positioner carried thereby (see Figs. 11A-11C, 12-15).

### ***Allowable Subject Matter***

6. Claims 4-6, 9, 13-15, 18, 22-24 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dishman et al (US Patent No. 6,271,953) is cited to show method and system for optical free space communications using non-mechanical beam steering.

Margeson (US Pub. No. 2004/0008433) is cited to show wavefront aberration correction system.

Hazelton et al (US Pub. No. 2004/0036940) is cited to show adaptive optic with discrete actuators for continuous deformation of a deformable mirror system.

Graves et al (US Pub. No. 2004/0156638) is cited to show atmospheric optical data transmission system.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DS  
September 12, 2006

*David Singh*